

ATTACHMENT A

Claims 1 - 13: (Cancelled)

14. (New) A monocyclopentadienyl complex comprising a structural feature of formula $\text{Cp-Y}_m\text{M}^{\text{A}}$ (I), wherein:

Cp is a cyclopentadienyl system comprising an aryl substituent;

Y is a substituent which is bound to Cp and comprising at least one uncharged donor comprising at least one atom of group 15 or 16 of the Periodic Table;

M^{A} is titanium, zirconium, hafnium, vanadium, niobium, tantalum, chromium, molybdenum or tungsten, or an element of group 3 or a lanthanide of the Periodic Table; and

m is 1, 2 or 3.

15. (New) A monocyclopentadienyl complex comprising formula $\text{Cp-Y}_m\text{M}^{\text{A}}\text{X}_n^{\text{A}}$ (V), wherein:

Cp is a cyclopentadienyl system comprising an aryl substituent;

Y is a substituent which is bound to Cp and comprises at least one uncharged donor comprising at least one atom of group 15 or 16 of the Periodic Table;

M^A is titanium, zirconium, hafnium, vanadium, niobium, tantalum, chromium, molybdenum or tungsten, or an element of group 3 or a lanthanide of the Periodic Table;

m is 1, 2 or 3;

X^A independently of one another, are fluorine, chlorine, bromine, iodine, hydrogen, a C_1 - C_{10} -alkyl, a C_2 - C_{10} -alkenyl, a C_6 - C_{20} -aryl, an alkylaryl comprising 1-10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part, $NR^{23A}R^{24A}$, OR^{23A} , SR^{23A} , SO_3R^{23A} , $OC(O)R^{23A}$, CN, SCN, β -diketonate, CO, BF_4^- , PF_6^- or bulky noncoordinating anions, or two radicals X^A form a substituted or unsubstituted diene ligand, or two or more X^A radicals may be joined to one another;

$R^{23A}-R^{24A}$ independently of one another, are hydrogen, a C_1 - C_{20} -alkyl, a C_2 - C_{20} -alkenyl, a C_6 - C_{20} -aryl, an alkylaryl comprising 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part, or SiR^{25A}_3 , wherein $R^{23A}-R^{24A}$ may also be substituted by halogens or nitrogen- and oxygen-containing groups, or two $R^{23A}-R^{24A}$ radicals optionally can be joined to form a five- or six-membered ring;

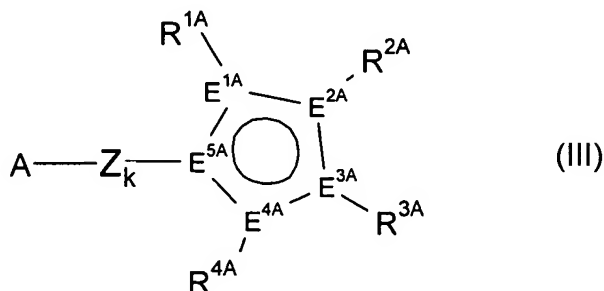
R^{25A} independently of one another, are hydrogen, a C_1 - C_{20} -alkyl, a C_2 - C_{20} -alkenyl, a C_6 - C_{20} -aryl, an

alkylaryl comprising from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part, wherein two R^{25A} radicals optionally can join to form a five- or six-membered ring; and

n is 1, 2, or 3.

16. (New) The monocyclopentadienyl complex as claimed in claim 15, wherein X^A is a 1,3-diene ligand.

17. (New) The monocyclopentadienyl complex as claimed in claim 14, wherein Y comprises group $-Z_k-A-$; the group $-Z_k-A-$ together with the cyclopentadienyl system Cp and M^A form a monocyclopentadienyl complex comprising formula $Cp-Z_k-A-M^A$ (II), wherein $Cp-Z_k-A$ comprises:



wherein:

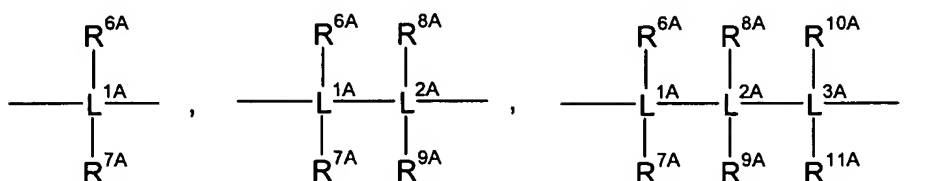
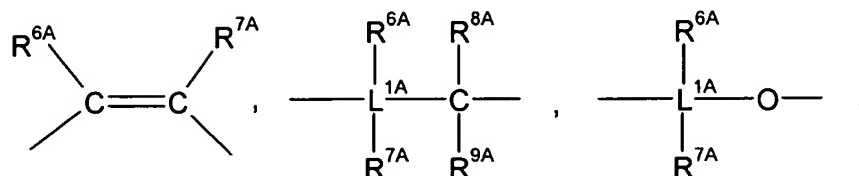
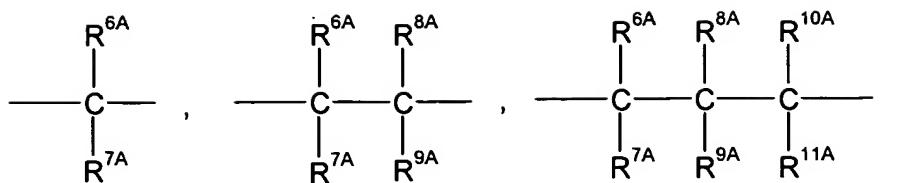
$E^{1A}-E^{5A}$ are each carbon or a heteroatom, with the proviso that not more than one $E^{1A} - E^{5A}$ are phosphorus;

$R^{1A}-R^{4A}$ independently of one another, are hydrogen, a C_1-C_{22} -alkyl, a C_2-C_{22} -alkenyl, a C_6-C_{22} -aryl, an alkylaryl comprising 1 to 10 carbon atoms in the alkyl radical and 6-20 carbon atoms in the aryl

radical, $\text{NR}^{5\text{A}}_2$, $\text{N}(\text{SiR}^{5\text{A}}_3)_2$, $\text{OR}^{5\text{A}}$, $\text{OSiR}^{5\text{A}}_3$, $\text{SiR}^{5\text{A}}_3$, $\text{BR}^{5\text{A}}_2$, wherein optionally $\text{R}^{1\text{A}}\text{-R}^{4\text{A}}$ can be substituted by at least one halogen, or two vicinal $\text{R}^{1\text{A}}\text{-R}^{4\text{A}}$ radicals optionally can be joined to form a five-, six-, or seven-membered ring, or two vicinal $\text{R}^{1\text{A}}\text{-R}^{4\text{A}}$ radicals optionally can be joined to form a five-, six-, or seven-membered heterocycle ring comprising at least one atom from the group consisting of N, P, O and S, with the proviso that at least one $\text{R}^{1\text{A}}\text{-R}^{4\text{A}}$ is a $\text{C}_1\text{-C}_{22}$ -alkyl, a $\text{C}_2\text{-C}_{22}$ -alkenyl, a halogen, a haloalkyl comprising 1-10 carbon atoms, or a haloaryl comprising 1-10 carbon atoms, or a $\text{C}_6\text{-C}_{22}$ aryl, wherein the $\text{C}_6\text{-C}_{22}$ aryl optionally can be substituted by N-, P-, O- or S-containing substituents;

$\text{R}^{5\text{A}}$ independently of one another, are hydrogen, a $\text{C}_1\text{-C}_{20}$ -alkyl, a $\text{C}_2\text{-C}_{20}$ -alkenyl, a $\text{C}_6\text{-C}_{20}$ -aryl, an alkylaryl comprising from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part, or two geminal radicals that optionally can be joined to form a five- or six-membered ring;

Z is a divalent bridge between A and Cp selected from the group consisting of:



-BR^{6A}-, -BNR^{6A}R^{7A}-, -AlR^{6A}-, -Sn-, -O-, -S-, -SO-,
-SO₂-, -NR^{6A}-, -CO-, -PR^{6A}- or -P(O)R^{6A},

wherein

L^{1A}-L^{3A} independently of one another, are silicon or germanium;

R^{6A}-R^{11A} independently of one another, are hydrogen, a C₁-C₂₀-alkyl, a C₂-C₂₀-alkenyl, a C₆-C₂₀-aryl, an alkylaryl comprising from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part, or SiR^{12A}₃, wherein R^{6A}-R^{11A} optionally can be substituted by at least one halogen or two geminal or vicinal R^{6A}-R^{11A} radicals optionally can be joined to form a five- or six-membered ring;

R^{12A} independently of one another, are hydrogen, a C₁-C₂₀-alkyl, a C₂-C₂₀-alkenyl, a C₆-C₂₀-aryl, a C₆-C₂₀

alkylaryl comprising from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part, a C₁-C₁₀-alkoxy, or C₆-C₁₀-aryloxy, wherein two R^{12A} radicals optionally can be joined to form a five- or six-membered ring;

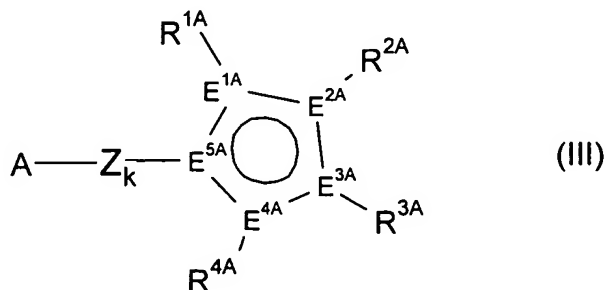
A is an uncharged donor group comprising at least one atom of group 15 or 16 of the Periodic Table of Elements, or a carbene;

M^A is a metal selected from the group consisting of titanium comprising an oxidation state 3, vanadium, chromium, molybdenum, and tungsten; and

k is 0 or 1.

18. (New) The monocyclopentadienyl complex as claimed in claim 17, wherein A is an unsubstituted, substituted, or fused heteroaromatic ring system.

19. (New) The monocyclopentadienyl complex as claimed in claim 15, wherein Y comprises group -Z_k-A-; the group -Z_k-A- together with the cyclopentadienyl system Cp, and M^A forms a monocyclopentadienyl complex comprising formula Cp-Z_k-A-M^A (II), wherein Cp-Z_k-A comprises:



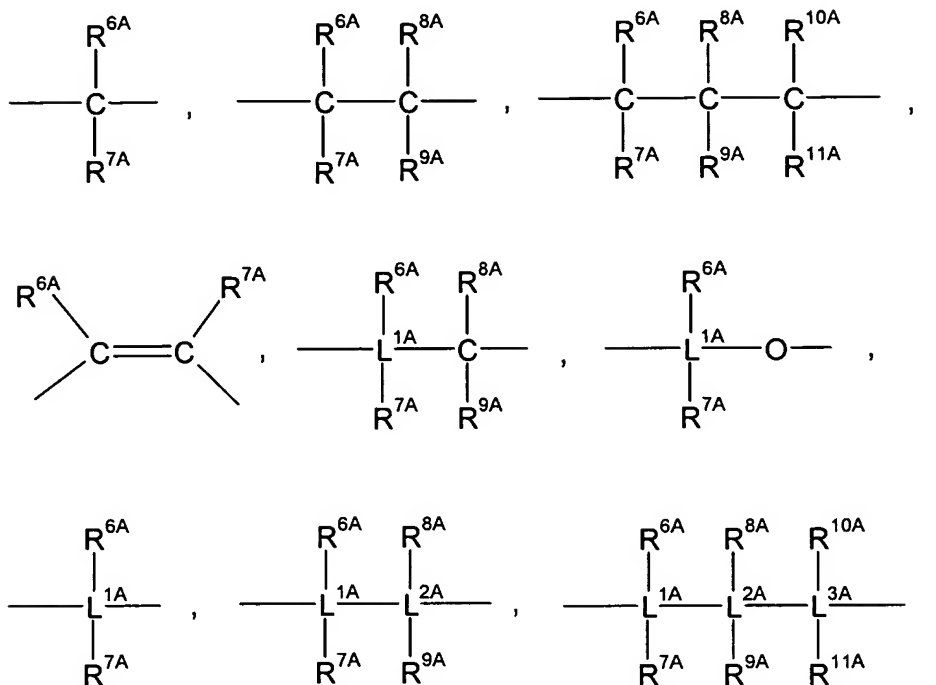
wherein:

E^{1A} - E^{5A} are each carbon or a heteroatom, with the proviso that not more than one E^{1A} - E^{5A} are phosphorus;

R^{1A} - R^{4A} independently of one another, are hydrogen, a C_1 - C_{22} -alkyl, a C_2 - C_{22} -alkenyl, a C_6 - C_{22} -aryl, an alkylaryl comprising 1 to 10 carbon atoms in the alkyl radical and 6-20 carbon atoms in the aryl radical, NR^{5A}_2 , $N(SiR^{5A}_3)_2$, OR^{5A} , $OSiR^{5A}_3$, SiR^{5A}_3 , BR^{5A}_2 , wherein optionally R^{1A} - R^{4A} can be substituted by at least one halogen, or two vicinal R^{1A} - R^{4A} radicals optionally can be joined to form a five-, six-, or seven-membered ring, or two vicinal R^{1A} - R^{4A} radicals optionally can be joined to form a five-, six-, or seven-membered heterocycle ring comprising at least one atom from the group consisting of N, P, O and S, with the proviso that at least one R^{1A} - R^{4A} is a C_1 - C_{22} -alkyl, a C_2 - C_{22} -alkenyl, a halogen, a haloalkyl comprising 1-10 carbon atoms, or a haloaryl comprising 1-10 carbon atoms, or a C_6 - C_{22} aryl, wherein the C_6 - C_{22} aryl optionally can be substituted by N-, P-, O- or S-containing substituents;

R^{5A} independently of one another, are hydrogen, a C_1 - C_{20} -alkyl, a C_2 - C_{20} -alkenyl, a C_6 - C_{20} -aryl, an alkylaryl comprising from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part, or two geminal radicals that optionally can be joined to form a five- or six-membered ring;

Z is a divalent bridge between A and Cp selected from the group consisting of:



-BR^{6A}-, -BNR^{6A}R^{7A}-, -AlR^{6A}-, -Sn-, -O-, -S-, -SO-,
 -SO₂-, -NR^{6A}-, -CO-, -PR^{6A}- or -P(O)R^{6A},
 wherein

L^{1A}-L^{3A} independently of one another, are silicon or germanium;

R^{6A}-R^{11A} independently of one another, are hydrogen, a C₁-C₂₀-alkyl, a C₂-C₂₀-alkenyl, a C₆-C₂₀-aryl, an alkylaryl comprising from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part, or SiR^{12A}₃, wherein R^{6A}-R^{11A} optionally can be substituted by at least one halogen or two geminal

or vicinal R^{6A} - R^{11A} radicals optionally can be joined to form a five- or six-membered ring;

R^{12A} independently of one another, are hydrogen, a C_1 - C_{20} -alkyl, a C_2 - C_{20} -alkenyl, a C_6 - C_{20} -aryl, a C_6 - C_{20} alkylaryl comprising from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part, a C_1 - C_{10} -alkoxy, or C_6 - C_{10} -aryloxy, wherein two R^{12A} radicals optionally can be joined to form a five- or six-membered ring;

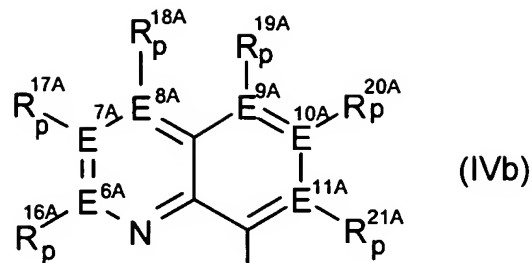
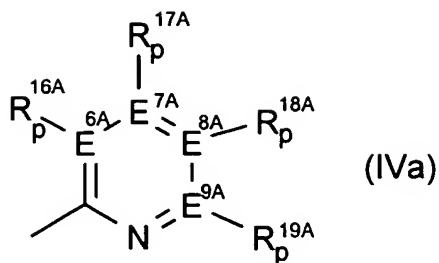
A is an uncharged donor group comprising at least one atom of group 15 or 16 of the Periodic Table of Elements, or a carbene;

M^A is a metal selected from the group consisting of titanium comprising an oxidation state 3, vanadium, chromium, molybdenum, and tungsten; and

k is 0 or 1.

20. (New) The monocyclopentadienyl complex as claimed in claim 19, wherein A is an unsubstituted, substituted, or fused heteroaromatic ring system.

21. (New) The monocyclopentadienyl complex as claimed in claim 17, wherein A comprises formula (IVa) or (IVb):



wherein:

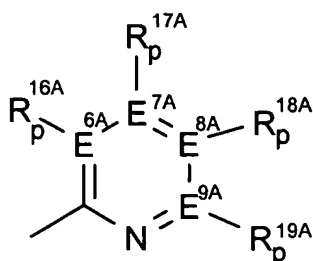
$E^{6A}-E^{11A}$ independently of one another, are carbon or nitrogen;

$R^{16A}-R^{21A}$ independently of one another, are hydrogen, a C_1-C_{20} -alkyl, a C_2-C_{20} -alkenyl, a C_6-C_{20} -aryl, an alkylaryl comprising from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part, or SiR^{22A}_3 , wherein $R^{16A}-R^{21A}$ optionally can be substituted by at least one halogen or nitrogen, or two vicinal $R^{16A}-R^{21A}$ radicals or R^{16A} and Z optionally can be joined to form a five- or six-membered ring;

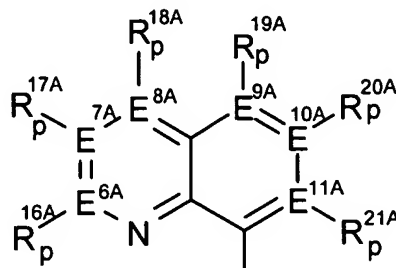
R^{22A} independently of one another, are hydrogen, a C_1-C_{20} -alkyl, a C_2-C_{20} -alkenyl, a C_6 -a C_{20} -aryl, an alkylaryl comprising from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part, or two R^{22A} radicals optionally can be joined to form a five- or six-membered ring; with the proviso that

p is 0 when $E^{6A}-E^{11A}$ is nitrogen, and p is 1 when $E^{6A}-E^{11A}$ is carbon.

22. (New) The monocyclopentadienyl complex as claimed in claim 18, wherein A comprises formula (IVa) or (IVb):



(IVa)



(IVb)

wherein:

$E^{6A}-E^{11A}$ independently of one another, are carbon or nitrogen;

$R^{16A}-R^{21A}$ independently of one another, are hydrogen, a C_1-C_{20} -alkyl, a C_2-C_{20} -alkenyl, a C_6-C_{20} -aryl, an alkylaryl comprising from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part, or SiR^{22A}_3 , wherein $R^{16A}-R^{21A}$ optionally can be substituted by at least one halogen or nitrogen, or two vicinal $R^{16A}-R^{21A}$ radicals or R^{16A} and Z optionally can be joined to form a five- or six-membered ring;

R^{22A} independently of one another, are hydrogen, a C_1-C_{20} -alkyl, a C_2-C_{20} -alkenyl, a C_6 -a C_{20} -aryl, an alkylaryl comprising from 1 to 10 carbon atoms in the alkyl part and 6-20

carbon atoms in the aryl part, or two R^{22A} radicals optionally can be joined to form a five- or six-membered ring; with the proviso that

p is 0 when $E^{6A}-E^{11A}$ is nitrogen, and p is 1 when $E^{6A}-E^{11A}$ is carbon.

23. (New) The monocyclopentadienyl complex as claimed in claim 17, wherein -Z-A and the aryl substituent are in the 1,3-positions relative to one another.

24. (New) The monocyclopentadienyl complex as claimed in claim 19, wherein -Z-A and the aryl substituent are in the 1,3-positions relative to one another.

25. (New) A catalyst system for olefin polymerization comprising:

A) at least one monocyclopentadienyl complex according to claim 14;

B) optionally, an organic or inorganic support;

C) optionally, one or more activating compounds;

D) optionally, further catalysts for olefin polymerization; and

E) optionally, one or more metal compounds comprising a metal of group 1, 2 or 13 of the Periodic Table.

26. (New) A catalyst system for olefin polymerization comprising:

A) at least one monocyclopentadienyl complex according to claim 15;

B) optionally, an organic or inorganic support;

C) optionally, one or more activating compounds;

D) optionally, further catalysts for olefin polymerization; and

E) optionally, one or more metal compounds comprising a metal of group 1, 2 or 13 of the Periodic Table.

27. (New) The prepolymerized catalyst system comprising a catalyst system as claimed in claim 25, the catalyst system further comprising one or more linear C₂-C₁₀ 1-alkenes polymerized onto the catalyst system in a mass ratio of from 1:0.1 to 1:1,000.

28. (New) The process for preparing polyolefins by polymerization or copolymerization of olefins in presence of the catalyst system as claimed in claim 25.

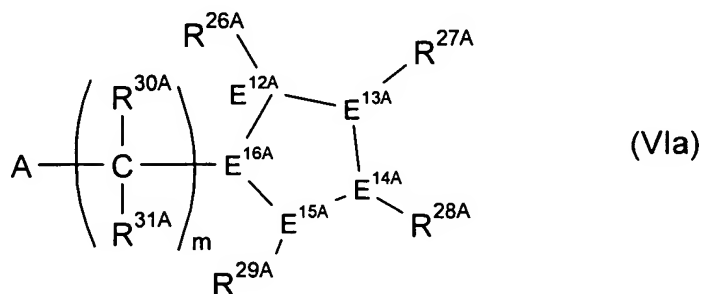
29. (New) The process for preparing polyolefins by polymerization or copolymerization of olefins in presence of the catalyst system as claimed in claim 27.

30. (New) The prepolymerized catalyst system comprising a catalyst system as claimed in claim 26, the catalyst system further comprising one or more linear C₂-C₁₀ 1-alkenes polymerized onto the catalyst system in a mass ratio of from 1:0.1 to 1:1,000.

31. (New) The process for preparing polyolefins by polymerization or copolymerization of olefins in presence of the catalyst system as claimed in claim 26.

32. (New) The process for preparing polyolefins by polymerization or copolymerization of olefins in presence of the catalyst system as claimed in claim 30.

33. (New) A process for preparing a cyclopentadiene system of formula (VIa)



wherein

E^{12A}-E^{16A} are each carbon, wherein four adjacent E^{12A}-E^{16A} form a conjugated diene system and the remaining E^{12A}-E^{16A} bears hydrogen,

R^{26A}-R^{29A} independently of one another, are hydrogen, a C₁-C₂₀-alkyl, a C₂-C₂₀-alkenyl, a C₆-C₂₀-aryl, a C₆-C₂₀

alkylaryl comprising from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part, $\text{NR}^{32\text{A}}_2$, $\text{N}(\text{SiR}^{32\text{A}}_3)_2$, $\text{OR}^{32\text{A}}$, $\text{OSiR}^{32\text{A}}_3$, $\text{BR}^{32\text{A}}_2$, $\text{SiR}^{32\text{A}}_3$, wherein $\text{R}^{26\text{A}}-\text{R}^{29\text{A}}$ optionally can be substituted by at least one halogen or two vicinal $\text{R}^{26\text{A}}-\text{R}^{29\text{A}}$ radicals that optionally can be joined to form a five- or six-membered ring, or two vicinal $\text{R}^{26\text{A}}-\text{R}^{29\text{A}}$ radicals optionally can form a heterocycle comprising at least one atom from the group consisting of N, P, O or S;

$\text{R}^{30\text{A}}-\text{R}^{31\text{A}}$ independently of one another, are a hydrogen, a C_1 - C_{20} -alkyl, a C_2 - C_{20} -alkenyl, a C_6 - C_{20} -aryl, a alkylaryl comprising from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part, or $\text{SiR}^{32\text{A}}_3$, wherein $\text{R}^{30\text{A}}-\text{R}^{31\text{A}}$ optionally can be substituted by at least one halogen, and $\text{R}^{30\text{A}}$ and A, or $\text{R}^{31\text{A}}$ and A optionally can be joined to form a five- or six-membered ring;

$\text{R}^{32\text{A}}$ independently of one another, are hydrogen, a C_1 - C_{20} -alkyl, a C_2 - C_{20} -alkenyl, a C_6 - C_{20} -aryl, an alkylaryl comprising from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part, and two geminal $\text{R}^{32\text{A}}$ radicals optionally can be joined to form a five- or six-membered ring;

m is 0, 1 or 2;

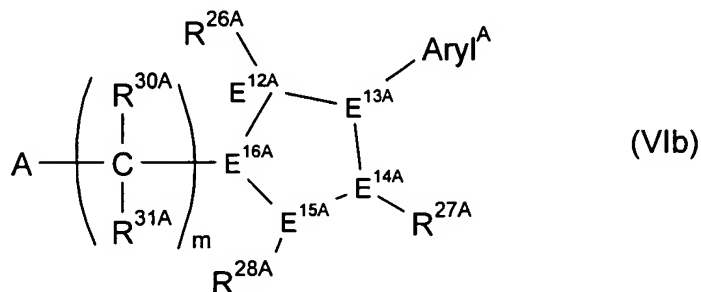
A is an uncharged donor group comprising at least one atom of group 15 or 16 of the Periodic Table of Elements, or a carbene;

the process comprising:

- reacting an $(A-(CR^{29A}R^{30A})_m)^-$ anion with a cyclopentanedione or a silyl ether of an enolised cyclopentanedione.

34. (New) The process of claim 33, wherein A is an unsubstituted, substituted, or fused heteroaromatic ring system.

35. (New) A process for preparing a cyclopentadiene system of formula (VIb)



wherein:

$E^{12A}-E^{16A}$ are each carbon, wherein four adjacent $E^{12A}-E^{16A}$ form a conjugated diene system and the remaining $E^{12A}-E^{16A}$ bears hydrogen;

$R^{26A}-R^{28A}$ independently of one another, are hydrogen, a C_1-C_{20} -alkyl, a C_2-C_{20} -alkenyl, a C_6-C_{20} -aryl, an alkylaryl comprising from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part, SiR^{32A}_3 , wherein $R^{26A}-R^{28A}$ optionally can be substituted by at least one halogen, and two

vicinal $R^{27A}-R^{28A}$ radicals optionally can be joined to form a five- or six-membered ring, or two vicinal $R^{27A}-R^{28A}$ radicals optionally can be joined to form a heterocycle comprising at least one atom from the group consisting of N, P, O or S;

$R^{30A}-R^{31A}$ independently of one another, are hydrogen, a C_1-C_{20} -alkyl, a C_2-C_{20} -alkenyl, a C_6-C_{20} -aryl, an alkylaryl comprising from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part, or SiR^{32A}_3 , wherein $R^{30A}-R^{31A}$ optionally can be substituted by at least one halogen, and R^{30A} and A, or R^{31A} and A optionally can be joined to form a five- or six-membered ring;

R^{32A} independently of one another, are hydrogen, a C_1-C_{20} -alkyl, a C_2-C_{20} -alkenyl, a C_6-C_{20} -aryl, an alkylaryl comprising from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part, or two geminal R^{32A} radicals optionally can be joined to form a five- or six-membered ring;

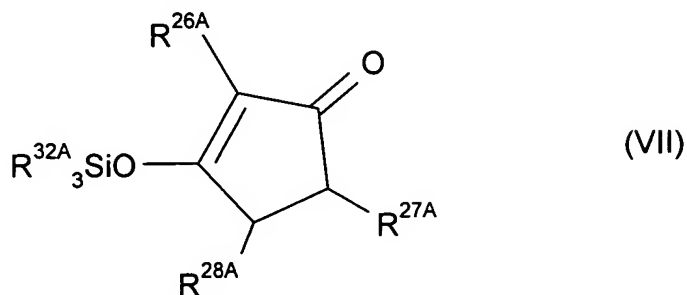
Aryl^A is a C_6-C_{22} -aryl, optionally substituted by at least one N-, P-, O- or S-containing substituent, C_1-C_{22} -alkyl, C_2-C_{22} -alkenyl, halogen, haloalkyl comprising 1-10 carbon atoms, or haloaryl comprising 1-10 carbon atoms;

m is 0 or 1;

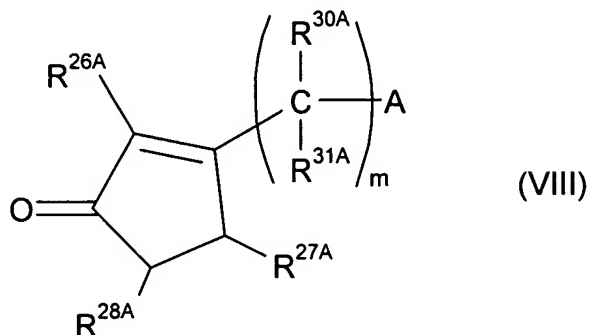
A is an unsubstituted, substituted, or fused heteroaromatic ring system;

the process comprising:

- reacting an $(A-(CR^{30A}R^{31A})_m)^-$ anion with a cyclopentenone system of formula (VII)

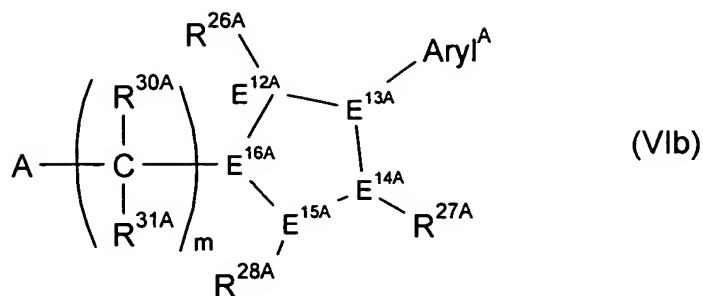


to form a cyclopentenone of the formula (VIII)



36. (New) The process for preparing a cyclopentadiene system of claim 35, wherein Aryl^A is selected from phenyl, naphthyl, biphenyl, anthracenyl, and phenanthrenyl.

37. (New) A cyclopentadiene system of formula (VIb),



wherein:

$E^{12A}-E^{16A}$ are each carbon, wherein four adjacent $E^{12A}-E^{16A}$ form a conjugated diene system and the remaining $E^{12A}-E^{16A}$ bears hydrogen;

$R^{26A}-R^{28A}$ independently of one another, are hydrogen, a C_1-C_{20} -alkyl, a C_2-C_{20} -alkenyl, a C_6-C_{20} -aryl, an alkylaryl comprising from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part, or SiR^{32A}_3 , wherein $R^{26A}-R^{28A}$ optionally can be substituted by at least one halogen, and two vicinal $R^{27A}-R^{28A}$ radicals optionally can be joined to form a five- or six-membered ring, or two vicinal $R^{27A}-R^{28A}$ radicals optionally can be joined to form a heterocycle comprising at least one atom from the group consisting of N, P, O or S;

$R^{30A}-R^{31A}$ independently of one another, are hydrogen, a C_1-C_{20} -alkyl, a C_2-C_{20} -alkenyl, a C_6-C_{20} -aryl, an alkylaryl comprising from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part, or SiR^{32A}_3 , wherein $R^{30A}-R^{31A}$ optionally can be substituted by at least one halogen, and R^{30A} and

A, or R^{31A} and A optionally can be joined to form a five- or six-membered ring;

R^{32A} independently of one another, are hydrogen, a C₁-C₂₀-alkyl, a C₂-C₂₀-alkenyl, a C₆-C₂₀-aryl, an alkylaryl comprising from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part, or two geminal R^{32A} radicals optionally can be joined to form a five- or six-membered ring;

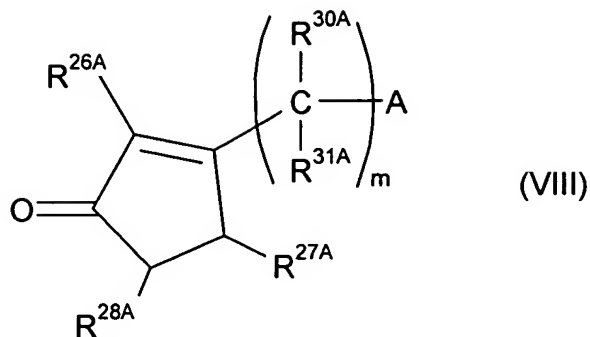
Aryl^A is a C₆-C₂₂-aryl, optionally substituted by at least one N-, P-, O- or S-containing substituent, C₁-C₂₂-alkyl, C₂-C₂₂-alkenyl, halogen, haloalkyl comprising 1-10 carbon atoms, or haloaryl comprising 1-10 carbon atoms;

m is 0 or 1; and

A is an unsubstituted, substituted, or fused heteroaromatic ring system.

38. (New) The cyclopentadiene system as claimed in claim 37, wherein Aryl^A is selected from phenyl, naphthyl, biphenyl, anthracenyl, and phenanthrenyl.

39. (New) A cyclopentenone of formula (VIII)



wherein:

R^{26A} - R^{28A} independently of one another, are hydrogen, a C_1 - C_{20} -alkyl, a C_2 - C_{20} -alkenyl, a C_6 - C_{20} -aryl, an alkylaryl comprising from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part, or SiR^{32A}_3 , wherein R^{26A} - R^{28A} optionally can be substituted by at least one halogen, and two vicinal R^{27A} - R^{28A} radicals optionally can be joined to form a five- or six-membered ring, or two vicinal R^{27A} - R^{28A} radicals optionally can be joined to form a heterocycle comprising at least one atom from the group consisting of N, P, O and S;

R^{30A} - R^{31A} independently of one another, are hydrogen, a C_1 - C_{20} -alkyl, a C_2 - C_{20} -alkenyl, a C_6 - C_{20} -aryl, an alkylaryl comprising from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part, or SiR^{32A}_3 , wherein R^{30A} - R^{31A} optionally can be substituted by at least one halogen, and R^{30A} and A, or R^{31A} and A optionally can be joined to form a five- or six-membered ring;

R^{32A} independently of one another, are hydrogen, a C_1 - C_{20} -alkyl, a C_2 - C_{20} -alkenyl, a C_6 - C_{20} -aryl, an

alkylaryl comprising from 1 to 10 carbon atoms in the alkyl part and 6-20 carbon atoms in the aryl part, and two geminal R^{32A} radicals optionally can be joined to form a five- or six-membered ring;

Aryl^A is a C₆-C₂₂-aryl, optionally substituted by at least one N-, P-, O- or S-containing substituent, C₁-C₂₂-alkyl, C₂-C₂₂-alkenyl, halogen, haloalkyl comprising 1-10 carbon atoms, or haloaryl comprising 1-10 carbon atoms;

m is 0 or 1; and

A is an unsubstituted, substituted, or fused heteroaromatic ring system.

40. (New) The cyclopentenone as claimed in claim 39, wherein Aryl^A is selected from phenyl, naphthyl, biphenyl, anthracenyl, and phenanthrenyl.